U.S. Geological Survey (USGS)
Community for Data Integration (CDI)
Request for Proposals (RFP)

For Fiscal Year 2019

Issue Date: October 15, 2018

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Overview

This document describes the CDI Request for Proposals (RFP) process for fiscal year 2019 (FY19). The CDI RFP consists of a two-stage process: Statements of Interest (SOI) and Full Proposals. Contact *cdi@usgs.gov* with any questions about the CDI RFP. Additional resources for the RFP are available on the proposals section of the CDI wiki: *https://my.usgs.gov/confluence/x/EgCcAw*.

New in FY19

- **New themes for the FY19 Request for Proposals:** This year, the CDI executive sponsors are encouraging proposals that produce building blocks for an Integrated Predictive Science Capacity with the following themes. See more detail in the section *FY19 Topical Emphasis.*
    - Producing FAIR (Findable, Accessible, Interoperable, and Reusable) data and tools for Integrated Predictive Science Capacity (see the *Enabling FAIR Data site*)
    - Reusing or repurposing modular tools such as those that were developed by *previous CDI projects*, including the *CDI Risk Map*,
    - Building authoritative national datasets for hazards or assets (integrating data and assessing quality),
    - Tools and methods for biosurveillance of emerging invasive species and health threats.
- **New proposal submission system:** We have retired the old proposal manager system. We will be using Google Forms to collect submission information and files.
- **New commenting and voting procedure:** We have retired the IdeaLab platform for commenting and voting. We will be using the *CDI wiki* for commenting, and a new system for online voting. Commenting will open for a period before voting ballots are distributed to CDI members. Once the voting period opens, no new voting members of CDI will be added for this year's process.
- **Statement of Interest lightning session talks has a new simple template and option to prerecord:** Last year we piloted 1-minute lightning talks to help present the Statement of Interest ideas to the CDI community and initiate commenting and voting. We will hold that session again, but to simplify the process, slides will follow a strict template with project title, Lead PI name and contact information, and a single image. Proposers have the option of submitting a pre-recorded 1-minute talk ***or*** giving a live 1-minute talk.
- **Examples of previous SOIs/Proposals:** We have created a page on the CDI wiki to show good examples of past submissions at *https://my.usgs.gov/confluence/x/WgdEJ*.

Eligibility

Personnel from any USGS mission area, region, program, center, office, or duty station and their partner(s) are encouraged to apply. All proposals must specify a **USGS Federal employee** as lead Principal Investigator (PI). USGS personnel may be involved in more than one prospective or existing proposal, but may be the lead PI on only *one* proposal.

Estimated Available Funds

Funding for CDI projects varies from year to year and is directly influenced by the overall USGS budget. Since fiscal year 2009, CDI projects have been funded at a total of about $400,000 – $500,000 each year and it is anticipated that FY19 will be similar to previous years. Applicants can request funding up to $50,000 maximum. Proposed budgets must include a minimum of 30% of the requested amount in matching funds.

Distribution of Funds

In FY19, CDI will distribute funds to the lead USGS Science Center only, and the lead Science Center will be in charge of further distributions to other Centers or external partners. This practice was initiated in FY18 to expedite the distribution of funds.

Estimated Schedule for Submission, Review, and Awards

This is a tentative schedule, please check the schedule posted at the *2019 Proposals page* for any changes.

RFP Information Session……October 24, 2018, 1 pm ET
Submission Deadline for Statement of Interest (SOI)…..……..……....November 16, 2018, 5 pm ET
Comment Period Begins ……...……..……..November 19, 2018
SOI Lightning Presentation Session…….……November 28, 2018, 3 pm ET
SOI Voting Opens……...…..……..……....November 30, 2018
SOI Voting Closing……...……..……..……....December 14, 2018, 11:59 pm ET
Applicants Notified and Full Proposals Requested……..…….……...Early January 2019
Invited Full Proposals Due…….…….....Mid-February 2019
Funded Projects Announced…….……March 13, 2019
Awarded Funds must be Spent……..…… ……...September 30, 2019
Final Project Reporting……..March 2, 2020

Application Process

1. Submit Statement of Interest and Present Lightning Talk

Submit an SOI consisting of a 1-page narrative and a 1/2 page budget for initial evaluation. SOI guidance can be found in *Appendix A – Statement of Interest (SOI) Guidance*. In addition, the CDI will hold a session for submitters to present their proposals to the community in a one-minute, one-slide lightning-talk format. The purpose of the session is to help submitters receive suggestions, gain support from the community, and help the community efficiently learn about the breadth of the SOIs. To aid the development of statements of interest, submitters may use the *FY19 RFP Collaboration Forum* to seek partners or other feedback.

2. Evaluate Statements of Interest

All SOIs will be reviewed by the CDI Community. The SOIs will be considered according to the *Evaluation Criteria for the Statement of Interest and Full* Proposal. Note that the CDI Executive Sponsors may select proposals that develop innovative methods for integrating, analyzing, or visualizing data in support of the USGS Director's *Bureau priorities* (see *https://atthecore.usgs.gov/science-planning/#/*, (accessible on the USGS network) scroll down to the FY19 section) or current RFP themes, and a percentage of CDI Funds may be awarded to proposals that address those topics.

3. Invitation to Submit Full Proposal

Based on the SOI evaluation, selected SOI applicants will be invited to submit a Full Proposal. Full Proposal guidance can be found in *Appendix B – Invited Full Proposal Guidance*.

4. Full Proposal Review Process

Full Proposals will be evaluated according to the *Evaluation Criteria for the Statement of Interest and Full* Proposal. Proposals will be reviewed by a panel consisting of a professional peer group that is knowledgeable in data management, information technology, and other

relevant disciplines in the context of the CDI. Recommendations by the Review Panel will be presented to the CDI Executive Sponsors for final selection.

Project Reporting

A representative from each CDI funded project will be required to attend the 2019 CDI Workshop and to provide a separate informal mid-year briefing to the CDI Facilitators to communicate the status of the project. Projects must also contribute to the CDI Funded Project Report, which will be compiled in early 2020. At that time, project leads must provide a brief written report describing the project accomplishments, benefits, and deliverables with links to products or publications.

Description of the Request for Proposals

The CDI builds and shares knowledge about topics such as data integration, data stewardship, scientific computing, and approaches for knowledge delivery. The main goal of CDI funding is to improve our collective knowledge about how to create better, longer-lasting, and more accessible science products by leveraging the tools, methods, and datasets available to the Earth and biological science communities. The CDI places high value on innovative projects that, in the near-term, produce new and reusable ideas, methods or tools that have an impact beyond a single Program, Center, Region, or Mission Area. CDI project proposals will be evaluated based on the following guiding principles:

- Focus on targeted efforts that yield near-term benefits to Earth and biological science
- Leverage existing capabilities and data
- Implement and demonstrate innovative solutions (e.g., methodologies, tools, or integration concepts) that could be used or replicated by others at scales from project to enterprise
- Preserve, expose, and improve access to Earth and biological science data, models, and other outputs
- Develop, organize, and share knowledge and best practices in data integration

FY19 Topical Emphasis

Each year, the CDI has accepted statements of interest on any topic that follow the CDI guiding principles, noting that the CDI Executive Sponsors may select proposals that support the current Bureau Priorities. This year, we continue to support a focus outlined in the *USGS FY18 Bureau Priorities*: a USGS Integrated Predictive Science Capacity that will "deliver powerful new products and services that provide: 1) vulnerability detection and assessment, 2) prediction and forecasting, 3) early warning, and 4) decision support at the scale of decisions." This year, the CDI executive sponsors are encouraging proposals that address one or more of the following themes:

1. Producing FAIR (Findable, Accessible, Interoperable, and Reusable) data and tools for Integrated Predictive Science Capacity (*see the Enabling FAIR Data site*)
2. Reusing or repurposing modular tools such as those that were developed by *previous CDI projects*, including the *CDI Risk Map*,
3. Building authoritative national datasets for hazards or assets (integrating data and assessing quality),
4. Tools and methods for biosurveillance of emerging invasive species and health threats.

We are still accepting submissions on any topic that follow the CDI guiding principles, but note that we are planning for a subset of supported projects this year to be related to the themes above. Of total funding, CDI hopes to award approximately 50% of funding to qualified projects that are associated with the stated themes, depending on

the number of relevant submissions received. Project teams in these focus areas may be asked to work with the CDI facilitators to leverage related projects' work and progress.

In addition to the Bureau Priorities and the themes above, statements of interest that propose activities that address the recommendations from the 2017 CDI Workshop are encouraged. See the *Workshop Report* for more detail.

Head to the *FY19 Collaboration Forum* for more discussion of this year's topical emphasis.

Unique Aspects of the CDI Request for Proposals Process

The CDI proposals process has several aspects that may be unfamiliar for first-time participants. The selection process incorporates community-involvement and multiple ways for submitters to communicate about their statements of interest.

Gaining Community Support for Statements of Interest

All CDI members have the ability to comment and vote on the submitted Statements of Interest. Therefore, it is in the submitter's interest to promote their idea to the community, and to communicate the value added to the CDI by the proposed activities. This process may be puzzling to participants who are not accustomed to any promotion of proposals beyond submitting files to a review panel. However, the CDI views this process as an opportunity to practice and improve plain-language communication and the ability to articulate the value of proposed activities. The community comment period also harnesses the expertise of the CDI community to make suggestions and improve on project ideas. These unique aspects help the CDI toward its goal of supporting the most useful and innovative ideas. In Phase 2 of the proposals process, after the community has given its input, a formal review panel evaluates the full proposals, similar to more typical proposal processes.

Statement of Interest Lightning Presentation

In past years, the community has expressed that it is difficult to absorb the large number of ideas that are submitted in Phase 1 of the proposals process. Since FY 2018, to assist in acquainting the CDI community with the submitted statements of interest, we host an **SOI Lightning Presentation Session** at the beginning of the commenting and voting period. Each submitter will have the chance to present their SOI idea in an online one-minute lightning presentation. This year, to simplify the process, slides will follow a strict template with project title, Lead PI name and contact information, and a single image. Submitters have the option of pre-recording a one-minute presentation as an audio file, or they can present live.

CDI Science Support Framework

Project proposals must also relate to elements of the CDI Science Support Framework (SSF), which categorizes and relates the activities and processes through which research data flows, and upon which the CDI operates. These elements include Data Management, Knowledge Management, the stages of the *Science Data Lifecycle Model*, Applications, Web services, Semantics, Information, Data assets, and Communities of Practice (*See*

Appendix C – CDI Science Support *Framework (SSF)*).

Examples of projects that relate to the goals and Science Support Framework

- Delivery of an immediate benefit to solve an existing data integration challenge, such as methods for blending datasets, or best practices for alignment/assimilation of data at different scales particularly with respect to Bureau priorities.
- Creation of innovative environments, tools, data stores, or services that enable discovery and usage of USGS data. This includes design patterns, management approaches, or products like web services or other software that can be used by other data publishers
- Development of standards or best practices for data management through community consensus building, such as convening a workshop and writing a white paper
- Development of a general ontology or tools for tagging data in support of standards and environments to facilitate discovery, understanding, and integration
- Testing or application of the aforementioned to a new, real-world problem to demonstrate and document strengths and issues for the purpose of feedback and improvement
- Exploitation of advanced or emerging technologies or approaches that enable new forms of USGS scientific knowledge creation or communication, such as developing mobile computing applications for rigorous data collection, or establishment of scientific policies or protocols around the novel component
- Development of innovative practices, methods, and strategies to better exploit collected data resources, such as data mining, parallel processing, large-scale data analysis, or scientific computing techniques and to improve data sharing, facilitate data preservation, and encourage lifecycle data management
- Development of vehicles to communicate or share knowledge, such as a committee to propose protocols/standards, workshops, online or in-person training course/materials, white paper, etc.
- Any of these or similar topics that have not been addressed otherwise within the agency

Proposal Concepts that should *not* be submitted to the CDI

- The CDI does not seek to supplant traditional natural science research or to fill a funding gap on a project supported elsewhere. Examples of topics that are a poor fit for CDI funding include:
- Supporting the collection of new data or field research.
- Monitoring, assessment, or dataset creation projects. Although the CDI may fund the creation of some broadly-usable ("foundational") data content, this is normally considered out of scope.
- Projects that would normally be funded by individual Program Areas.
- Projects that would normally be funded by other proposal processes such as the *John Wesley Powell Center for Analysis and Synthesis, Center of Excellence for Geographic Information Science (CEGIS)*, and *Office of Organizational and Employee Development (OED).*

Examples of successful past CDI statements of interest and full proposals:
https://my.usgs.gov/confluence/x/WgdEJ

All past CDI Projects:
https://www.sciencebase.gov/catalog/item/520e8340e4b08494c3cb34ec

Evaluation Criteria for the Statement of Interest and Full Proposal

Both the SOIs and Full Proposals will be evaluated based on the following six criteria. SOIs will only be expected to provide a concise statement in each of the criteria while Full Proposals must provide more detail. The evaluation weights (percentages) will only apply to the Full Proposal evaluation. For instructions on submitting SOIs, see *Appendix A – Statement of Interest (SOI) Guidance*; for Full Proposals, see *Appendix B – Invited Full Proposal Guidance*.

Scope (25%)

Evaluation will be based on whether the proposal adequately demonstrates the need for the effort/activity, how much the proposal contributes to the guiding principles and element(s) of the CDI Science Support Framework, and whether the effort has potential impact beyond a single Program, Center, Mission Area, or Region. CDI projects will also be evaluated on anticipated return on investment (e.g., cost savings, code utilization, publications, operational efficiencies, etc.).

Technical Approach (25%)

Evaluation will be based on the reasonableness of the technical approach applied to the problem and whether the approach is innovative or employs a proven, reliable technique that is appropriate to the problem. Evaluation will consider the steps, methodologies, technologies, and resources to be utilized in implementing the project. This includes facilities, computational/analytic platforms and tools, hardware/software, and other equipment supporting the project and/or its products.

Project Experience and Collaboration (25%)

Evaluation will be based on the appropriateness of the experience, special qualifications, and skills possessed by team members for successful completion of the proposed project. Evaluation will also consider whether inter-disciplinary or cross-Mission Area/Region collaboration and partnerships have been pursued where appropriate.

Sustainability, Outreach, and Communication (15%)

Evaluation will be based on how well the proposal describes the intended sustainability of the project deliverables (products, tools, services, metadata) for long-term access, reusability, and potential for integration, as well as the plan for communicating the value of the products during and after the project period. All products resulting from CDI projects must comply with the *Office of Science Quality and Integrity Instructional Memoranda* on data management (SM 502.6-502.9). These products must be freely shared and made available, without charge or restriction, to the CDI, the broader USGS community, and beyond as appropriate. Software products developed with CDI funding must be uploaded to an appropriate code repository at the close of the funding period, and follow the latest relevant USGS Instructional Memoranda.

Budget Justification (5%)

Evaluation will be based on whether the budget is at or below $50,000 and meets the minimum 30% in-kind match. Travel must be included for at least one representative to attend the 2019 CDI Workshop, June 4-7, 2019 in Boulder, CO. Travel cannot include data field collection. Evaluation will consider whether justification of salaries and contractor costs, travel, and equipment/publication costs are appropriate to project needs and the work hours proposed are reasonable within the timeframe. Projects with contractor support must describe how the contract work will be managed and documented to ensure that products are USGS property.

Timeline (5%)

Evaluation will be based on clear presentation of the project phases and milestones and the feasibility of the proposed workload given the short project duration. Although notification of award may come earlier, assume that

funding will be awarded no sooner than May 31, 2019 and reference specific months or dates within FY19 or relative to time from date of award (e.g., 3 weeks after award date). The timeline must demonstrate reasonable completion and complete use of funds by September 30, 2019. Recognizing the USGS publication process may take additional time beyond the end of the project, indicate the anticipated publication date for any USGS publications resulting from the project.

Appendix A – Statement of Interest (SOI) Guidance

1) Prepare a Statement of Interest document

Using the template on the *CDI FY19 RFP Forms* page, create a document that includes the following information:

- Project title and name of the USGS lead PI
- Project narrative, addressing the topics in the *Evaluation Criteria for the Statement of Interest and Full Proposal* (1-page maximum)
- Estimated budget table (following template, 0.5 page)

Use Times New Roman 11 point font with one-inch margins, and save the file (which should be 1.5 pages total) as a PDF document.

Estimated Budget Table (½ page)

Budget Category	Federal Funding "Requested"	Matching Funds "Proposed"
1. PERSONNEL (SALARIES including benefits):		
Federal Personnel Total:	$	$
Contract/Collaborator Personnel Total:	$	$
Total Salaries:	$0	$0
2. TRAVEL EXPENSES:		
Travel Total (Per Diem, Airfare, Mileage/Shuttle) **x** # of Trips:	$	$
Other Expenses (e.g. Registration Fees):	$	$
Total Travel Expenses:	$0	$0
3. OTHER DIRECT COSTS: (itemize)		
Equipment (including software, hardware, purchases/rentals):	$	$
Publication Costs:	$	$
Office Supplies, Training, Other Expenses (specify):	$	$
Total Other Direct Costs:	$0	$0
Total Direct Costs:	$0	$0
Indirect Costs (%):	$0	$0
GRAND TOTAL:	$0	$0

**Note: Travel must be included for at least one representative to attend the 2019 CDI Workshop, June 4-7, 2019 in Boulder, CO. Travel cannot include data field collection. See the budget justification section of the Evaluation Criteria for the Statement of Interest and Full Proposal for more information.*

2) Register on the Online Proposal Management System

Register on the online system that is linked from the *2019 Proposals* wiki page and upload your SOI file. The proposal management system collects all administrative information, so it is not necessary to include anything other than the project title and name of the USGS lead PI on the actual SOI document. Please respond to all questions in the proposal management system or the submission will be considered incomplete and invalid. Upon submission to the Google Form, you will receive an email receipt with a link that allows you to edit your submission up until the deadline.

Fields in the Online Proposal Management System

We suggest that you prepare this information before registering on the online proposal management system.

- **Submission Title:** Include a descriptive title of the proposed project (140 character limit)
- **Principal Investigator (PI) Name:** List the lead USGS Principal Investigator (First Name Last Name)
- **PI Email address: NOTE**: If you are submitting an SOI on behalf of the lead PI, your email will be collected automatically by the form. Future notifications about the submission will go to both the registrant and the Lead PI.
- **PI ORCiD**: You can look up your ORCID at http://www.orcid.org. It is likely that the PI has one, all USGS authors are required to have an ORCID in IPDS.
- **PI Mission Area:** Enter text in "Other" if Mission Area is not applicable.
- **PI City and State:** Example: Denver, CO
- **PI Organization:** Sub-Unit within USGS. Example: USGS Woods Hole Coastal and Marine Science Center
- **CDI Science Support Framework Element(s):** Indicate up to three element(s) of the CDI SSF that the proposal covers (See *Appendix C - CDI Science Support Framework (SSF)*).
- **Project Description:** This short (1-2 sentence) description will be used in the voting system. The text should transmit the essence of the benefits of the project. (300 character limit)
- **List of anticipated deliverables from the project:** Include a brief list of the types of products that will be generated as a result of the project, e.g., mobile application, fact sheet, GIS shapefile, GIS data layer, desktop data entry application, online data entry application, online data cleaning application, USGS Blog article or press release, etc. The list should consist of short phrases as demonstrated in the previous sentence. (300 character limit)
- **Total Requested Funds:** Provide the total project funding requested from CDI, matching the value on your estimated budget table, not to exceed $50,000 of requested funds. These may be an estimate for Phase 1, though we encourage you to speak with your Administrative Officer to get the most accurate values.
- **In-Kind Matching Funds:** Provide the total in-kind funding from other sources, matching the value on the estimated budget. There must be a minimum of 30% of the requested funds as in-kind match. These may be an estimate for Phase 1, though we encourage you to speak with your AO to get the most accurate values.
- **Collaborator Information:** For collaborator infomation, fill out the Collaborator Template on the *FY19 RFP Forms* page and enter name, email address, city, state, and organization of your collaborators.

Appendix B – Invited Full Proposal Guidance

Proposals must be submitted through the online proposal management system linked to the *2019 Proposals wiki page*. The submission form will have collected all administrative information in Phase 1 with the SOI, so it is not necessary to include a cover sheet page with the full proposal. However, please be sure to complete any questions that appear within the online proposal submission form and update any responses that may have changed from Phase I for your proposal to be considered complete and valid.

1) Prepare three separate documents for the online proposal submission system.

The Budget Form and Data Management Planning form are available on the *CDI FY19 RFP Forms* page.

- A **Full Proposal, single PDF document** (not to exceed 10MB) with:
  - Proposal Narrative (max. 7 pages)
  - Appendices (e.g., CVs – max. 2 pages each, letters of support – max. 1 page each)
- A **Budget Form** using the MS Excel template
- A **Data Management Planning Form, single PDF document (**using the MS Word template**)**

Proposals should be formatted to standard letter size (8.5" W by 11" L). All proposals should be no more than 7 pages, single-spaced, not including the references and appendices. Narrative (body) text must be rendered in Times New Roman 11 point font, excluding headings which must be formatted bold and 12 point. All pages (including appendices) must be numbered. Failure to follow the stated guidelines may reflect negatively on the proposal.

All graphics, photos, illustrations, tables, graphs, and charts must be embedded directly in the proposal document and be specifically referenced at least once in the narrative (body) of the proposal. All graphics must be accompanied by a caption that describes the graphic. These count towards the total number of pages allotted. References do not count toward the page count.

Proposal Narrative (max. 7 pages)

The main body of the proposal should consist of six sections which will be evaluated by the Review Panel:

- Scope
- Technical Approach
- Project Experience and Collaboration
- Sustainability, Outreach, and Communication
- Budget Justification
- Timeline

Prepare the sections according to the Evaluation Criteria for the Statement of Interest and Full Proposal.

Additional information specific to the Full Proposal phase are noted below.

- Budget Justification: Proposals may not exceed $50,000 in requested funding and must include a minimum of 30% in-kind match within the overall budget. **The lead PI(s) must work with their Administrative Officer (AO) to ensure an accurate budget and funding management responsibilities before submission.** Proposals utilizing USGS contracting staff must include in the Budget Justification statement a confirmation from the Contracting Officer's Representative (COR) that there is an available contract to complete the project. All CDI funds will be transferred to the lead USGS cost center through a change of allocation. The lead USGS cost center may then provide sub-awards to other collaborating organizations/cost centers.

Full Proposals must submit a *Budget Form* and include the Budget Justification statement to explain project costs in the following categories:

- *Personnel (Salaries including benefits):* Include estimates (by hours) and rate of compensation proposed for each named individual or category (e.g., graduate student). Ensure that the identified personnel and their affiliations are clearly listed. Projects with contractor support must describe how the contract work will be managed and documented to ensure that products are USGS property.
- *Travel Expenses:* Specify travel requirements for project meetings, and/or conference attendance. Itemize estimated travel costs to show the number of trips required, destinations, the number of travelers and per diem rates, cost of transportation (e.g., vehicle rental), and miscellaneous expenses for each trip. Travel must be included for at least one representative to attend the 2019 CDI Workshop in Boulder, CO (June 4-7, 2019). Travel cannot include data field collection.
- *Other Direct Costs:* Itemize any proposed permanent equipment acquisitions ($5,000 or more) and show each estimated cost. Explain costs including publication costs, office supplies, training, etc.
- *Indirect Costs (Overhead):* Provide indirect cost rate and amount approved for each institution.

Appendices

- Required: CV(s) of Principal Investigator(s) that highlights relevance to the proposed work **(max. 2 pages each)**
- Optional: CV(s) of other collaborator(s) that highlights relevance to the proposed work **(max. 2 pages each)**
- Optional: Letters of support from USGS or outside partners indicating a clear need for this effort. Submissions may also include Memoranda of Understanding (MOU) and/or letters of support indicating commitment to the longevity of the project. **(max. 1 page each)**

Budget Form

Applicants are required to use the *Budget Template* (in MS Excel format). Include Personnel, Travel Expenses, and Other Direct Costs, separating the CDI funds from the in-kind match as indicated in the template at the link above.

Data Management Planning Form

Applicants are required to use the *Data Management Planning (DMP) Form Template* and submit in PDF format. The DMP template has changed over the years, please do not use a template from a previous year. The information requested on the Data Management Planning Form helps project teams plan for data management and product communication needs. For more guidance on data management plans, see the *USGS Data Management Website*, specifically the Data Management checklist. All products resulting from CDI projects must comply with the *Office of Science Quality and Integrity Instructional Memoranda* on data management.

2) Enter Phase 2 information into the online proposal submission system

Instructions for accessing the online proposal submission system for full proposals will be sent to all Phase 2 participants. A cover sheet will be generated by the proposal management system. The cover sheet will aid reviewers and the review process by allowing them to easily distinguish between proposals and see each proposal's basic elements at a glance. The proposal management system has collected all administrative information in Phase 1 of the RFP, so it will not be necessary to re-enter the information or include a cover sheet page with the full proposal.

However, make sure to update any fields that have changed since Phase 1, especially the budget totals and anticipated deliverables.

Plain Language Summary

The online proposal system will ask for a synopsis of the overall project that is written for a general public audience (150 word maximum) that is suitable for sharing on public web sites and other outreach methods. Key points to include: Why is the project important? Why should the public care? What will the project accomplish? How will the results of the project work toward the goals of CDI and help stakeholders?

Appendix C – CDI Science Support Framework (SSF)

The Community for Data Integration (CDI) represents a dynamic aggregation of multiple communities of practice, focused on the advancement of scientific data and information management and integration capabilities across the USGS and external organizations.

Since 2009, CDI has funded a variety of projects that support the overarching goal of data integration. USGS and other researchers conduct monitoring, assessment, and research activities that generate data assets. Through the application of business, computational, and analytic processes and technologies, these data assets are converted into information that contributes to our understanding of the Earth's physical and biological systems. This is the context within which data management and integration occur and where the CDI operates (Fig. 1).

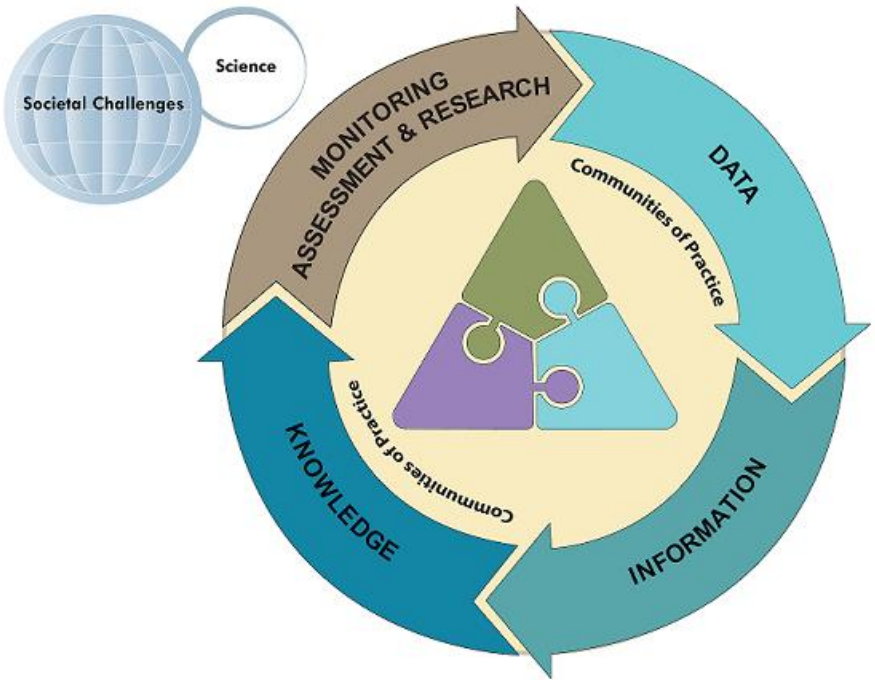

Figure 1: Overview of CDI Operational Context

Communities of Practice	Communities of practice include scientists, the CDI as a whole, CDI Working Groups, external partners, and the human network of scientific domain collaborators.
Computational Tools & Services	Computational tools and services include applications, Web services, data discovery tools, models, semantic services and tools, infrastructure, data brokers, and visualization tools.
Management, Policy & Standards	Management, policy, and standards include data stewardship, the implementation of the Science Data Lifecycle, knowledge management, data standards, governance, and policy.
Data & Information Assets	Data and information assets include persistent archives, data registries, catalogs, data, metadata, derived information products, knowledge bases, and vocabularies/ontologies.

The CDI SSF (Fig. 2) provides a conceptual architecture that illustrates how the CDI contributes to Bureau-level data integration efforts; and defines how current and future CDI projects fit within the framework.

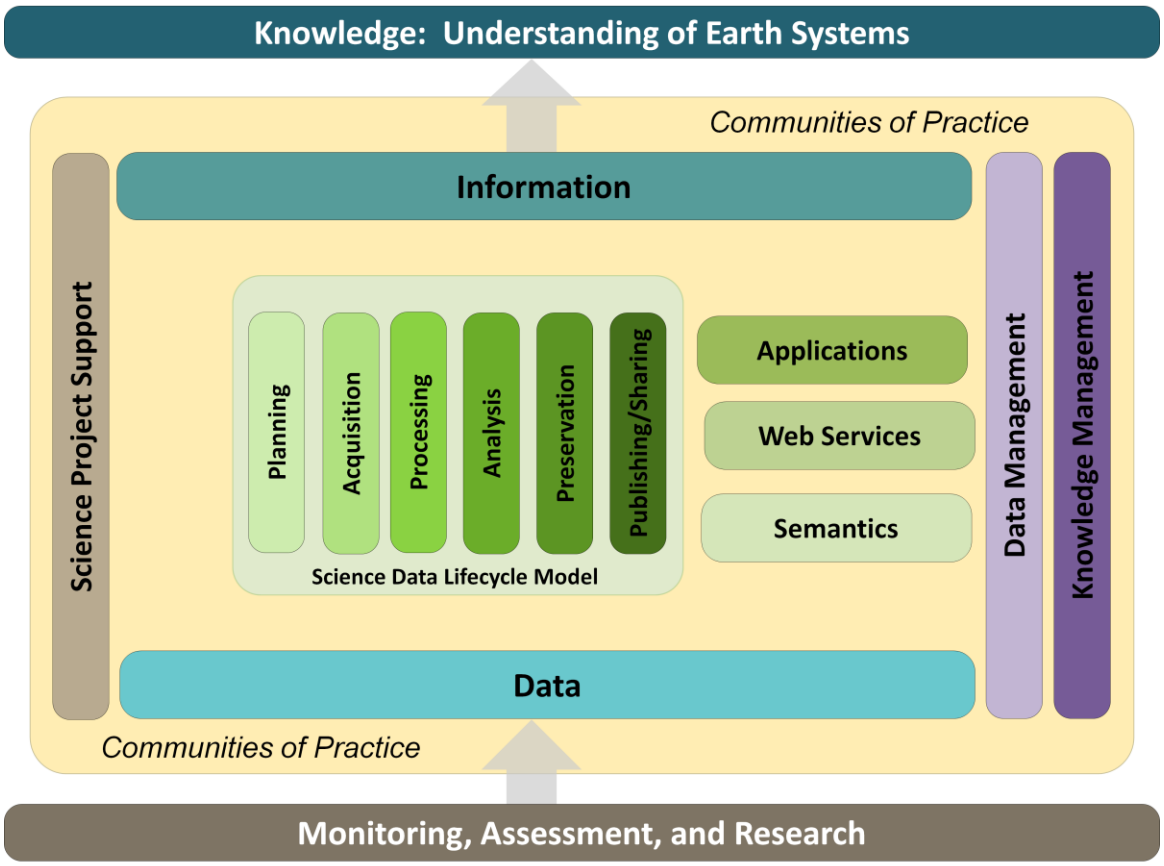

Figure 2: CDI Science Support Framework

USGS Data Assets Flow through the CDI Science Support Framework. USGS data assets flow vertically through the SSF from a base of monitoring, assessment, and research through the Science Data Lifecycle, applications, Web services, and semantics. The assets are transformed into information products that benefit from data and knowledge management and also increase knowledge and understanding of the Earth's physical and biological systems. Data assets flow horizontally through the SSF from science project support to data and knowledge management.

The horizontal elements in the SSF represent the "what" of the CDI: products and tools that contribute to the advancement of scientific data and lead to the development of knowledge and understanding of the Earth's systems.

The vertical elements in the SSF represent the "how" of the CDI: the processes, the implementation of standards and best practices, and the interactions among people, data, and technology used to achieve data integration.

Individual Framework element descriptions:

Science Inputs (brown elements)

***Monitoring, Assessment, & Research*:** USGS scientists conduct monitoring, assessment, and research that generate data assets. Through the application of business, computational, and analytical processes and technologies, these assets are converted into information

products that can be shared with other researchers, stakeholders, and citizens to increase our knowledge and understanding of the Earth's physical and biological systems.

***Science Project Support*:** Successful science projects encompass a range of activities represented in the Data Lifecycle. At each step in the cycle, researchers and data stewards rely on an array of sophisticated tools and services for data, information and knowledge discovery, acquisition, integration, management, and sharing.

Communities of Practice (tan element)

Communities of practice are the foundation for CDI and all its products – the communities of people working towards the goal of advancing scientific data and information management and data integration across the USGS.

Data & Information Assets (blue elements)

USGS assets include **Data** (e.g., raw data, databases, and linked open data (RDF[1])); **Information** or derived/interpreted information products (e.g., published or shared maps, reports, datasets); and **Knowledge** of all types and in all forms — recorded, organized, and preserved in the form of artifacts. Knowledge can be improved, shared across groups, organizations, and domains, and reused to support learning and research.

Computational Tools & Services (green elements)

Science Data Lifecycle include tools and services that move data through the lifecycle, human and machine interactions, and interactions with data through technology.

Detailed descriptions of the Science Data Lifecycle:

- **Planning** – A documented sequence of intended actions to identify and secure resources and gather, maintain, secure, and utilize data assets.
- **Acquisition** – The series of actions for collecting or adding to data assets.
- **Processing** – A series of actions or steps performed on data to verify, organize, transform, integrate, and extract data in an appropriate output form for subsequent use.
- **Analysis** – A series of actions and methods performed on data that help describe facts, detect patterns, develop explanations, and test hypotheses.
- **Preservation** – Actions and procedures to keep data for some period of time; to set data aside for future use.
- **Publishing/Sharing** – To prepare and issue, or to disseminate data or information products.

Semantics convert raw data into data that can be interpreted by machines: Machine Readable Metadata, Semantic Mediation for Data Integration & Discovery, Ontologies/Vocabularies, and World Wide Web Consortium Standards.

Web Services include machine to machine data exchange, SOAP,[2] REST,[3] SPARQL[4] EndPoints, and other protocols and services.

Applications include human readable data services and user interfaces to data driven applications.

Management, Policy, & Standards (purple elements)

Data Management includes data and metadata standards and policies and occurs in all phases of the Data Lifecycle from scientific research to finished information products.

Knowledge Management involves the creation, standardized documentation, and organization of knowledge using tools such as SKOS[5] Vocabularies and information modeling, resulting in the formation of knowledge bases.

[1] Resource Description Framework
[2] Simple Object Access Protocol
[3] REpresentational State Transfer
[4] SPARQL Protocol and RDF Query Language
[5] Simple Knowledge Organization System

Appendix D – CDI Coordinators

We encourage proposers to get in touch with relevant CDI contacts to discuss their proposals.

CDI Executive Sponsors
Kevin Gallagher, Associate Director, USGS Core Science Systems
Tim Quinn, Chief, Office of Enterprise Information, USGS
Cheryl Morris, Director, USGS Core Science Analytics, Synthesis and Library Program

CDI Facilitators
Leslie Hsu (lhsu@usgs.gov)
Leah Colasuonno (lcolasuonno@usgs.gov)

CDI Collaboration Area leads may have specific suggestions or contacts for their focus topic. All CDI Collaboration Area pages can be accessed at *https://my.usgs.gov/confluence/x/yhv1I*.

Selected CDI Collaboration Area Leads

Bioinformatics
Denise Akob, Robert (Scott) Cornman, and Christina Kellogg

Citizen-Centered Innovation
Sophia Liu

Data Management
Vivian Hutchison and Cassandra Ladino

Data Science
Lindsay Carr

Earth-Science Themes
Roland Viger

eDNA
Pete Ruhl and JC Nelson

Metadata Reviewers
Fran Lightsom

Semantic Technologies
Fran Lightsom

Software Development
Michelle Guy, Blake Draper, and Cassandra Ladino

Subduction Zone
Joan Gomberg

Tech Stack
Richard Signell

Appendix E - Additional Instructions for Project Products

Use the specific wording below to acknowledge funding in CDI publications and products:

This work was supported by funding from the USGS Community for Data Integration (CDI).

Appendix F - Checklist for Submission

SOI Submission Checklist

By 5pm EASTERN on Friday, November 16, 2018:

- You have checked the latest announcements at the 2019 Proposal Page: https://my.usgs.gov/confluence/x/R4gFJ
- All required information listed in Appendix A is entered into the Google Submission Form.
- Current year SOI template was used and uploaded.
- Collaborators spreadsheet was used and uploaded.
- Proposal narrative text is no more than one page.

By COB in your time zone on Tuesday, November 27, 2018:

- You have emailed a single image to cdi@usgs.gov to use on your slide at the Lightning Presentation Session, to be held November 28, 2018, at 3pm Eastern. We will use a default image if you do not send one.

Full Proposal Submission Checklist

By 5pm EASTERN on the deadline for Full Proposals:

- You have checked the latest announcements at the 2019 Proposal Page: https://my.usgs.gov/confluence/x/R4gFJ
- Google Submission Form updated as appropriate.
- Plain language summary entered into the submission form.
- Submitted current FY19 budget template.
- Submitted current FY19 data management plan.
- Submitted proposal narrative is no more than 7 pages (excluding references).